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**GB 1596791 A GB 1590485 A EP 0433911 A1
EP 0077047 A1 US 5137717 A US 4883651 A**

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(54) **Herbal deodorant**

(57) A deodorant composition for use in a liquid roll-on or stick deodorant has active antibacterial constituents consisting essentially of natural materials and is essentially free of petroleum derived constituents and alcohols. In a preferred embodiment of the composition for use as a liquid roll-on or stick deodorant, the active antibacterial constituents include about 1% to 6% (by weight) Lichen Extract and about 0.1% to 3% (by weight) Coriander Oil.

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HERBAL DEODORANTBackground of the Invention

The invention relates to a deodorant composition,
5 e.g. for liquid roll-on or stick, employing only natural
bactericides for personal use.

To be effective, a personal deodorant must, of
course, reduce odor. It is known that odor in the
axillary vault is caused by bacteria metabolizing the
10 rich supply of proteins and lipids supplied by the
apocrine sweat glands. The bacterial flora bound in the
human axilla (or armpit) that are responsible for odor
generation have been identified as gram positive
lipophilic diphtheroids and micrococci. The diphtheroids
15 produce the typical pungent axillary odor and the
micrococci produce a sweaty isovaleric acid type odor.
The moisture and minerals secreted by the eccrine sweat
glands serve to enrich and replenish axilla flora.

In order for a deodorant to work properly, it
20 must: A) Cling tenaciously to the skin and resist
washing away with eccrine sweat; B) Sufficiently reduce
populations of diphtheroids and micrococci and their
subsequent metabolic end products; and C) Mask the
presence of androgen steroids (produced by bacteria)
25 which are detectable by the human nose at a concentration
of a few parts per million.

The use of natural bactericides is known in the
art. For example, Kabara U.S. Patent No. 4,002,775 and
Hoppe et al. U.S. Patent No. 4,921,694 describe lauroyl
30 monoesters of glycerin and synergistic mixtures having
antibacterial activity. Also, EP Patent Publication No.
376761, German Patent Nos. 23 54 517, 23 51 927 and 23 51
864 and United Kingdom Patent Publication No. 1,475,226
describe the deodorizing effects of lichen acid, and
35 especially usnic acid.

Summary of the Invention

According to the invention, a deodorant composition has active antibacterial constituents consisting essentially of natural materials, and it is
5 essentially free of petroleum derived constituents and alcohols.

In preferred embodiments of one aspect of the invention, the deodorant composition for a liquid roll-on deodorant consists essentially of the following
10 ingredients, with the preferred ranges given by weight percent: (a) Glycerin, about 40% to 70%, preferably about 47 to 52%, and more preferably about 50%; (b) Chamomile Tea, about 10% to 50%, preferably about 18.8% to 22.8%, and more preferably about 20.8%; (c) Witch Hazel, about
15 5% to 25%, preferably about 16% to 20%, and more preferably about 18%; (d) Aloe Vera, about 5% to 20%, preferably about 8.0% to 12.0%, and more preferably about 10.0%; (e) Lichen Extract, about 1% to 6%, preferably about 1.8% to 2.2%, and more preferably about 2.0%; (f)
20 Oat Flour, about 0.1% to 3%, preferably about 0.45% to 0.55%, and more preferably about 0.5%; (g) Coriander Oil, about 0.1% to 3%, preferably about 0.35% to 0.45%, and more preferably about 0.40%; and (h) Xanthan Gum, about 0.1% to 3.0%, preferably about 0.25% to 0.35%, and more
25 preferably about 0.30%.

In preferred embodiments of another aspect of the invention, a deodorant composition for a stick deodorant consists essentially of the following ingredients, with the preferred ranges given by weight percent: (a)
30 Glycerin, about 40% to 70%, preferably about 47% to 52%, and more preferably about 50%; (b) Chamomile Tea, about 20% to 60%, preferably about 32% to 36%, and more preferably about 34%; (c) Sodium Stearate, about 3% to 8%, preferably about 4.75% to 5.25%, and more preferably
35 about 5.0%; (d) Witch Hazel, about 5% to 15%, preferably

about 3.3% to 3.7%, and more preferably about 3.5%; (e) Aloe Vera, about 5% to 15%, preferably about 3.3% to 3.7%, and more preferably about 3.5%; (f) Lichen Extract, about 1% to 6%, preferably about 1.8% to 2.2%, and more
5 preferably about 2.0%; (g) Oat Flour, about 0.1% to 3%, preferably about 1.2% to 1.3%, and more preferably about 1.25%; (h) Coriander Oil, about 0.1% to 3%, preferably about 0.38% to 0.42%, and more preferably about 0.40%; and (i) Glyceryl Monolaurate, about 0.1% to 0.6%,
10 preferably about 0.38% to 0.42%, and more preferably about 0.40%.

According to the invention, a deodorant composition has active antibacterial constituents consisting essentially of natural materials. In
15 preferred embodiments, the deodorant composition for liquid roll-on and stick deodorants consists essentially of the following ingredients, with the preferred ranges given by weight percent: (a) Lichen Extract, about 1% to 6%, preferably about 1.8% to 2.2%, and more preferably
20 about 2.0%; and (b) Coriander Oil, about 0.1% to 3%, preferably about 0.38 to 0.42%, and more preferably about 0.40%. In addition, the stick deodorant composition contains (c) Glyceryl Monolaurate, about 0.1% to 0.6%, preferably about 0.38 to 0.42%, and more preferably about
25 0.40%. The primary inactive constituent consists of glycerin. The composition is essentially free of petroleum derived constituents and alcohols.

These and other features and advantages of the invention will be seen from the following description of
30 a presently preferred embodiment, and from the claims.

Description of the Presently Preferred Embodiment(s)

The invention is a deodorant composition which contains natural antibacterial ingredients (e.g., lichen extract and coriander oil), and no petroleum derived
35 ingredients or alcohol, to provide gentle protection with

minimal cause for skin irritation. The composition is adaptable for use in a liquid roll-on deodorant, and for use in a stick deodorant.

Active Constituents

5 Deodorant compositions of the invention suitable for stick or liquid roll-on applications contain natural active constituents including coriander oil and lichen extract. These natural active constituents interact to accomplish odor prevention. The understanding of the
10 role that each constituent plays is based on in vivo, in vitro observations and theoretical considerations.

 In the preferred formulation, coriander acts to reduce both micrococci and diphtheroids, and further serves to mask any lingering androsterone compounds.

15 Coriander is composed mostly of oxygenated terpenoids that are weakly to moderately soluble in water. These terpenoids are, however, soluble in the phospholipid bilayer of cell membranes and act to interfere with energy metabolism. It is understood that emulsifying terpenoids
20 serve to enhance antimicrobial activity by increasing cell penetration potential. Coriander oil has a typical minimum inhibitory count of 0.1%, and the average zone of inhibition is 12 mm.

 In the preferred composition, lichen extract also
25 acts to reduce micrococci and diphtheroids. The active component in lichen extract is usnic acid. Usnic acid and its metal salt, sodium usnate, are potent, gram positive specific antibacterial compounds. The typical usnate content found in lichen extract is around 5.0%. A
30 one percent level of lichen extract represents only 0.05% sodium usnate. Part for part, sodium usnate is as powerful as triclosan. Usnic acid is a dibenzofuran derivative and, in the metal salt form, it is readily soluble in water. It inhibits mitosis and cell
35 respiration and easily permeates the cell wall of most

gram positive bacteria. Sodium usnate has a typical minimum inhibitory count (MIC) of 0.002% and a minimal germicidal concentration (MGC) of 0.1%. The lichen extract would then have an MIC of 0.04 and an MGC of 5 2.0%. The zone of inhibition for lichen extract is about 40 mm.

In formulations suitable for application as a liquid roll-on deodorant, due to the pH of the composition and the acidic nature of the axillary vault, 10 the application of the roll-on formulation distributes a dispersion of usnic acid on the skin's surface which then acts as a bactericide in the axillary vault. While the metal salt form of usnic acid is water soluble, the free form of usnic acid is not water soluble and will cling to 15 the skin surface despite the presence of eccrine sweat.

In formulations suitable for applications as a stick deodorant, an emollient glycerol monolaurate is typically provided, in addition to coriander oil and lichen extract, due to the relatively high solubility of 20 the metal salt form of usnic acid in water. The glycerol monolaurate serves to hold the usnic acid to the skin.

Glyceryl monolaurate is a tranester of glycerin and the lauric acid from coconut oil. It is a gram positive specific agent and has a minimum inhibitory 25 concentration of 0.1%, with a zone of inhibition of about 15 mm. Glyceryl monolaurate acts as an emollient, oil emulsifier, and possesses the aforementioned antibacterial qualities. It helps to enhance the efficacy of coriander by making it more water soluble, 30 and also serves to hold the lichen extract on the skin. The antibacterial action is only a consideration when the pH of the emollient reaches the range of from 6.0 to 7.0 in the axillary vault. The pH of the stick deodorant composition is in the range from 9.0 to 10.0 and activity 35 would not be observed until normal skin pH is restored.

The composition relies more specifically on its surfactant qualities and dry feel than antibacterial potential.

In formulations of the invention for use as a liquid roll-on deodorant, the proportions of active ingredients are typically as follows: lichen extract present in a range of about 1% to 6% by weight, and preferably in a range of about 1.8% to 2.2% by weight; and coriander oil present in a range of about 0.1% to 3% by weight, and preferably in a range of about 0.35% to 0.45% by weight.

In formulations of the invention for use as a stick deodorant, the proportions of active ingredients are typically as follows: lichen extract present in a range of about 1% to 6% by weight, and preferably in a range of about 1.8% to 2.2% by weight; coriander oil present in a range of about 0.1% to 3% by weight, and preferably in a range of about 0.38% to 0.42% by weight; and glyceryl monolaurate present in a range of about 0.1% to 0.6% by weight, and preferably in a range of about 0.38% to 0.42% by weight.

Inactive Constituents

A distinguishing factor of the invention composition from previous art is the incorporation of glycerin versus propylene glycol as the preferred humectant. While propylene glycol is antibacterial at a 10% solution level, glycerin in the composition of the invention is known to be bacteriostatic. With the potential for antibacterial enhancement aside, glycerine provides a moisturizing benefit with low skin irritation potential which is better than propylene glycol. In addition, the use of glycerin allows a break in the dependence upon petroleum derived ingredients.

The deodorant composition of the invention, suitable for both liquid roll-on deodorant and stick

deodorant applications, typically includes the following inactive constituents:

Glycerin is present in the formulations for both applications in a range of about 40.0 to 70.0 percent by weight, and preferably in a range of about 47.5 to 52.5 percent by weight.

Witch Hazel Distillate provides astringency without alcohol, which lessens the opportunity for skin irritation potential.

10 Aloe Vera provides soothing effects which minimize skin irritation potential.

Oat Flour contributes to the texture and application of the formulation, and it also acts as an absorbent to reduce the feel of wetness.

15 Chamomile Tea is another inactive ingredient.

In formulations suitable for application as a stick deodorant, sodium stearate is also present as an inactive ingredient. Sodium stearate is used as the structurant of the deodorant stick, as it is one of the
20 least allergy-causing of the sodium salts of fatty acids.

In formulations suitable for applications as a liquid roll-on deodorant, xanthan gum is included as a stabilizer.

In formulations of the invention for use as a
25 liquid roll-on deodorant, the proportions of inactive ingredients (in addition to glycerin) are typically as follows: chamomile tea present in a range of about 10% to 50% by weight, and preferably in a range of about 18.8% to 22.8% by weight; witch hazel present in a range of
30 about 5% to 25% by weight, and preferably in a range of about 16% to 20% by weight; aloe vera present in a range of about 5% to 20% by weight, and preferably in a range of about 8.0% to 12.0% by weight; oat flour present in a range of about 0.1% to 3% by weight, and preferably in a
35 range of about 0.45% to 0.55% by weight: and xanthan gum

present in a range of about 0.1% to 3.0% by weight, and preferably in a range of about 0.25% to 0.35% by weight.

In formulations of the invention for use as a stick deodorant, the proportions of inactive ingredients (in addition to glycerin) are as follows: chamomile tea present in a range of about 20% to 60% by weight, and preferably in a range of about 32% to 36% by weight; sodium stearate present in a range of about 3% to 8% by weight, and preferably in a range of about 4.75% to 5.25% by weight; witch hazel present in a range of about 5% to 15% by weight, and preferably in a range of about 3.3% to 3.7% by weight; aloe vera present in a range of about 5% to 15% by weight, and preferably in a range of about 3.3% to 3.7% by weight; and oat flour present in a range of about 0.1% to 3% by weight, and preferably in a range of about 1.2% to 1.3% by weight.

The compositions, prepared in the form of a liquid roll-on deodorant or a stick deodorant, provide personal deodorant protection with reduced cause for skin irritation.

In a preferred embodiment for a liquid roll-on deodorant, the composition is as follows (by weight):

	Glycerin	48.00%
	Chamomile Tea	20.80%
25	Witch Hazel	18.00%
	Aloe Vera	10.00%
	Lichen Extract	2.00%
	Oat Flour	0.50%
	Coriander Oil	0.40%
30	Xanthan Gum	0.30%

The composition has a pH in the range of from 7.0 to 8.0.

In a preferred embodiment for a stick deodorant, the composition is as follows (by weight):

35	Glycerin	50.00%
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	Chamomile Tea	33.95%
	Sodium Stearate	5.00%
	Witch Hazel	3.50%
	Aloe Vera	3.50%
5	Lichen Extract	2.00%
	Oat Flour	1.25%
	Coriander Oil	0.40%
	Glyceryl Monolaurate	0.40%

The composition has a pH in the range of from 9.0
10 to 10.0.

Other embodiments are within the following claims.
What is claimed is:

Claims

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1. A deodorant composition with active antibacterial constituents consisting essentially of naturally occurring materials or derivatives thereof, said composition being essentially free of petroleum
5 derived constituents and alcohols.

2. The deodorant composition of claim 1 wherein the active antibacterial constituents consist essentially of (by weight based upon total weight of the composition):

- 10 a. about 1% to 6% Lichen Extract;
 b. about 0.1% to 3% Coriander Oil; and
 c. about 0.1% to 0.6% Glyceryl Monolaurate.

3. The deodorant composition of claim 1 wherein the primary inactive constituent consists of glycerin.

15 4. The deodorant composition of claim 1, 2, or 3 wherein said composition is in the form of a stick.

 5. The deodorant composition of claim 2 wherein said composition is in the form of a stick and contains Lichen Extract in the range of about 1.8% to 2.2%, by
20 weight based upon total weight of the composition.

6. The deodorant composition of claim 5 containing about 2.0% by weight (based upon total weight of the composition) Lichen Extract.

 7. The deodorant composition of claim 2 wherein
25 said composition is in the form of a stick and contains Coriander Oil in the range of about 0.38% to 0.42%, by weight based upon total weight of the composition.

8. The deodorant composition of claim 7 containing about 0.40% by weight (based upon total weight of the composition) Coriander Oil.

9. The deodorant composition of claim 2 wherein said composition is in the form of a stick and contains Glyceryl Monolaurate in the range of about 0.38% to 0.42%, by weight based upon total weight of the composition.

10. The deodorant composition of claim 9 containing about 0.40% by weight (based upon total weight of the composition) Glyceryl Monolaurate.

11. The deodorant composition of claim 1 or 3 wherein said composition is in the form of a liquid roll-on.

12. The deodorant composition of claim 1 wherein said composition is in the form of a liquid roll-on and the active antibacterial constituents consist essentially of (by weight based upon total weight of the composition):

- a. about 1% to 6% Lichen Extract;
- b. about 0.1% to 3% Coriander Oil.

13. The deodorant composition of claim 12 containing Lichen Extract in the range of about 1.8% to 2.2%, by weight based upon total weight of the composition.

14. The deodorant composition of claim 13 containing about 2.0% by weight (based upon total weight of the composition) Lichen Extract.

15. The deodorant composition of claim 12 containing Coriander Oil in the range of about 0.35% to 0.45%, by weight based upon total weight of the composition.

5 16. The deodorant composition of claim 15 containing about 0.40% by weight (based upon total weight of the composition) Coriander Oil.

17. The deodorant composition of claim 12 wherein the primary inactive ingredient consists of glycerin.

10 18. A deodorant composition with active antibacterial constituents comprising, as the active antibacterial constituents, Coriander Oil and Lichen extract,

 said composition being essentially free of
15 petroleum derived constituents and alcohols.

19. The deodorant composition of claim 18 wherein said active antibacterial constituents further comprise glyceryl monolaurate.

20 20. The deodorant composition of claim 18 consisting essentially of (by weight based upon total weight of the composition):

- a. about 40% to 70% Glycerin;
- b. about 20% to 60% Chamomile Tea
- c. about 3% to 8% Sodium Stearate;
- 25 d. about 5% to 15% Witch Hazel;
- e. about 5% to 15% Aloe Vera;
- f. about 1% to 6% Lichen Extract;
- g. about 0.1% to 3% Oat Flour;
- h. about 0.1% to 3% Coriander Oil; and
- 30 i. about 0.1% to 0.6% Glyceryl Monolaurate.

21. The deodorant composition of claim 18 wherein said composition is in the form of a liquid roll-on.

22. The deodorant composition of claim 21 consisting essentially of (by weight based upon total weight of the composition):

- a. about 40% to 70% Glycerin;
- b. about 10% to 50% Chamomile Tea;
- c. about 5% to 25% Witch Hazel;
- d. about 5% to 20% Aloe Vera;
- 10 e. about 1% to 6% Lichen Extract;
- f. about 0.1% to 3% Oat Flour;
- g. about 0.1% to 3% Coriander Oil; and
- h. about 0.1% to 3% Xanthan Gum.

23. The deodorant composition of claim 22
15 containing Glycerin in the range of about 47% to 52%, by weight based upon total weight of the composition.

24. The deodorant composition of claim 23 containing about 50% by weight (based upon total weight of the composition) Glycerin.

20 25. The deodorant composition of claim 22 containing Chamomile Tea in the range of about 18.80% to 22.80%, by weight based upon total weight of the composition.

26. The deodorant composition of claim 25
25 containing about 20.80% by weight (based upon total weight of the composition) Chamomile Tea.

27. The deodorant composition of claim 22 containing Witch Hazel in the range of about 16.0% to

20.0%, by weight based upon total weight of the composition.

28. The deodorant composition of claim 27 containing about 18.00% by weight (based upon total weight of the composition) Witch Hazel.

29. The deodorant composition of claim 22 containing Aloe Vera in the range of about 8.0% to 12.0%, by weight based upon total weight of the composition.

30. The deodorant composition of claim 29 containing about 10% by weight (based upon total weight of the composition) Aloe Vera.

31. The deodorant composition of claim 22 containing Lichen Extract in the range of about 1.8% to 2.2%, by weight based upon total weight of the composition.

32. The deodorant composition of claim 31 containing about 2.0% by weight (based upon total weight of the composition) Lichen Extract.

33. The deodorant composition of claim 22 containing Oat Flour in the range of about 0.45% to 0.55%, by weight based upon total weight of the composition.

34. The deodorant composition of claim 33 containing about 0.5% by weight (based upon total weight of the composition) Oat Flour.

35. The deodorant composition of claim 22 containing Coriander Oil in the range of about 0.35% to

0.45%, by weight based upon total weight of the composition.

36. The deodorant composition of claim 35 containing about 0.40% by weight (based upon total weight of the composition) Coriander Oil.

37. The deodorant composition of claim 22 containing Xanthan Gum in the range of about 0.25% to 0.35%, by weight (based upon total weight of the composition).

38. The deodorant composition of claim 37 containing about 0.30% by weight (based upon total weight of the composition) Xanthan Gum.

39. The deodorant composition of claim 18 or 19 wherein said deodorant composition is in the form of a stick.

40. The deodorant composition of claim 20 wherein said deodorant composition is in the form of a stick.

41. The stick deodorant composition of claim 40 containing Glycerin in the range of about 47% to 52%, by weight based upon total weight of the composition.

42. The stick deodorant composition of claim 41 containing about 50% by weight (based upon total weight of the composition) Glycerin.

43. The stick deodorant composition of claim 40 containing Chamomile Tea in the range of about 32% to 36%, by weight based upon total weight of the composition.

44. The stick deodorant composition of claim 43 containing about 34% by weight (based upon total weight of the composition) Chamomile Tea.

45. The stick deodorant composition of claim 40 containing Sodium Stearate in the range of about 4.75% to 5.25%, by weight based upon total weight of the composition.

46. The stick deodorant composition of claim 45 containing about 5.0% by weight (based upon total weight of the composition) Sodium Stearate.

47. The stick deodorant composition of claim 40 containing Witch Hazel in the range of about 3.3% to 3.7%, by weight based upon total weight of the composition.

48. The stick deodorant composition of claim 47 containing about 3.5% by weight (based upon total weight of the composition) Witch Hazel.

49. The stick deodorant composition of claim 40 containing Aloe Vera in the range of about 3.3% to 3.7%, by weight based upon total weight of the composition.

50. The stick deodorant composition of claim 49 containing about 3.5% by weight (based upon total weight of the composition) Aloe Vera.

51. The stick deodorant composition of claim 40 containing Lichen Extract in the range of about 1.8% to 2.2%, by weight based upon total weight of the composition.

52. The stick deodorant composition of claim 51 containing about 2.0% by weight (based upon total weight of the composition) Lichen Extract.

53. The stick deodorant composition of claim 40 containing Oat Flour in the range of about 1.2% to 1.3%, by weight based upon total weight of the composition.

54. The stick deodorant composition of claim 53 containing about 1.25% by weight (based upon total weight of the composition) Oat Flour.

10 55. The stick deodorant composition of claim 40 containing Coriander Oil in the range of about 0.38% to 0.42%, by weight based upon total weight of the composition.

15 56. The stick deodorant composition of claim 55 containing about 0.40% by weight (based upon total weight of the composition) Coriander Oil.

20 57. The stick deodorant composition of claim 40 containing Glyceryl Monolaurate in the range of about 0.38% to 0.42%, by weight based upon total weight of the composition.

58. The stick deodorant composition of claim 57 containing about 0.40% by weight (based upon total weight of the composition) Glyceryl Monolaurate.

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Patents Act 1977
Examiner's report to the Comptroller under
Section 17 (The Search Report)

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Relevant Technical fields

(i) UK Cl (Edition L) A5B (BFG, BE)

(ii) Int Cl (Edition 5) A61K 7/32

Databases (see over)

(i) UK Patent Office

(ii) ONLINE DATABASES: WPI, CAS-ONLINE

Search Examiner

J F JENKINS

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11 MARCH 1993

Documents considered relevant following a search in respect of claims 1 TO 58

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 1596791 A (UNILEVER) - see examples	1
X	GB 1590485 A (BUSH BOAKE ALLEN) - see page 2 line 38 to page 3 line 1 and page 6 lines 18 to 37	1
X	EP 0433911 A1 (KAO CORPN) - see page 2 line 51 to page 3 line 33, Example 2 and Table 3	1
X	EP 0077047 A1 (SHIRAIMATSU SHINYAKU) - see page 2 lines 21 to 36 and page 5 lines 1 to 21	1
AE	US 5137717 A (WIXFORTH) - see Example 3	1
X	US 4883651 A (MEYER) - see column 3 lines 15-28	1

Category	Identity of document and relevant passages	Relevant to claim(s)

Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

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